

Oberlin

## Digital Commons at Oberlin

---

Honors Papers

Student Work

---

2013

### Activating Community to Enable Residential Energy Efficiency

David Roswell  
*Oberlin College*

Follow this and additional works at: <https://digitalcommons.oberlin.edu/honors>



Part of the [Environmental Studies Commons](#)

---

#### Repository Citation

Roswell, David, "Activating Community to Enable Residential Energy Efficiency" (2013). *Honors Papers*. 341.

<https://digitalcommons.oberlin.edu/honors/341>

This Thesis is brought to you for free and open access by the Student Work at Digital Commons at Oberlin. It has been accepted for inclusion in Honors Papers by an authorized administrator of Digital Commons at Oberlin. For more information, please contact [megan.mitchell@oberlin.edu](mailto:megan.mitchell@oberlin.edu).

# Activating Community To Enable Energy Efficiency

---

*David Roswell, Oberlin College*

## Prologue

It all started with one tree. Before I was born, my parents named our dog after the tree: Princess Magnolia of Alto Dale. When I was still in a carriage, the Magnolia was a landmark—should we walk to Reisterstown Road, or just to the Magnolia? By the time I was four, my brother Michael and I had colonized the tree, making it the official clubhouse for the Coocoocaya Club (mission statement: create a car that runs off of pollution in the air, instead of creating more).

When I was in the branches, I was invisible, completely shrouded by leaves. As a four-year-old constantly struggling to keep up with my six-year-old brother, the tree was my greatest ally; its limbs big enough, low enough, and plentiful enough that I could get wherever I wanted. Breathing in her flowers was intoxicating, and she was so confused that she would flower sporadically for many months of the year.

When I was four, the farm was sold. Stolen. I watched as jaws tore down barns like matchstick houses, the landscape I knew turn into mud and wooden stakes with neon tape.

My radical activist career began at age five, when my kindergarten teacher suggested that Michael and I put rocks and dirt down the tailpipes of the massive machines tearing apart our farm. Our favorite activity when friends came over was kicking over the plywood houses.

Our Magnolia, though, was scheduled for rescue. Her neon tape read “Do Not Cut.” Never before or after would we put so much faith, so much hope, into a piece of

ribbon. On our way to school one morning, half the limbs were gone, and a bulldozer was aligned for total destruction. I haven't stopped fighting for what I believe since.

## Table of Contents

Prologue.....	2
Table of Contents .....	4
Introduction .....	5
A Basic Framework .....	6
Methods.....	20
Barriers to Financing Energy Efficiency .....	21
Overview.....	21
Financing is Not the Main Barrier .....	22
Economic Barriers to Energy Efficiency Financing .....	25
Addressing Social and Psychological Barriers .....	30
Two Theories Of Behavior .....	31
Social and Psychological Barriers.....	34
Overcoming Social and Psychological Barriers.....	39
The Energy Advocate .....	42
The Energy Advocate program in Oberlin.....	47
Continued Funding for POWER.....	49
Addressing Physical Barriers To Energy Efficiency .....	51
Overview.....	51
A Home Repair Cooperative .....	53
Organizing The Enterprise as a Cooperative.....	57
How To Finance a Home Repair Cooperative.....	62
Private Resources.....	66
Case Studies .....	68
Challenges to a home repair cooperative .....	69
Areas for Further Research .....	70
Conclusion .....	71
Appendix.....	74
Resources .....	74
Case Studies.....	75
References.....	76

## Introduction

Global climate instability is the largest, most pressing challenge that humanity must face. It requires major social, political and economic change, within and across borders. Avoiding the worst effects in the future—and building communities strong and flexible enough to prosper in a changed world—will require all hands on deck. Yet, at the same time that people (citizens, organizers, organizations, and governments) focus on the abstract and far-flung issue of climate change, local communities are ailing. People can't afford to pay their bills, too busy putting food on the table to be civically engaged.

There is no silver bullet. As farmer and scholar Wendell Berry stresses, complex problems require complex solutions, and a simple solution is a fallacy and a danger. Problems must be considered as a whole, but solutions must be focused on particular interventions tailored to particular pieces of the problem. This thesis works to address global climate instability and build strong, resilient communities, but focuses on a small intervention: residential energy efficiency. This alone will not change the world, but as part of a broad movement, a “blessed unrest” as author Paul Hawken has coined it, it can.

This is a study about enabling residential energy efficiency, with a focus on Oberlin, Ohio. This document begins with the motivation for the project, followed by the basic framework in which the paper is situated, as well as an explanation of the research methods. The document then looks into three categories of barriers to energy efficiency and ways to overcome them. First, I evaluate and discuss financial barriers. Next, I situate the social and psychological barriers, and then explain and evaluate them. I discuss a remedy that has been successful in Oberlin and

elsewhere, the Energy Advocate. In the final section, I introduce a less commonly discussed barrier, aging housing stock. To address this issue, I suggest the development of a worker-owned home repair cooperative. I then conclude the document, and provide resources in the appendix.

## **A Basic Framework**

Neoclassical economics is the “mainstream” economic framework in the West, and the framework that drives most thinking and discussion about energy efficiency. It centers the study of economics on the allocation of scarce resources. The framework embodies many values, and encompasses a multitude of theories. Though neoclassical economics could be viewed as a detached academic discipline, I contend that due to its hegemony, it induces, rather than simply studies, a reality. Therefore, the study of neoclassical economics does not accurately reflect the world, and it also limits people’s ability to change reality. Because of this limiting effect, it is not possible to create a just and sustainable world within the neoclassical economic paradigm. Thus, a new justice- and sustainability-centered framework must be used.

In this section, I will discuss how neoclassical economics fails, and then present an alternate paradigm, the Solidarity Economy.

### **The Current Paradigm: Neoclassical Economics and Market Society**

Neoclassical Economics is a hegemonic study in the West. The study crowds out all other schools of economics in academia, politics, business and popular discourse. If the study were merely descriptive, this would not be a problem; but since it is prescriptive, the effects are broad and dire. The values, theories, and assumptions of neoclassical economics lead to the conclusion that a market society is a desirable system

to create and sustain. A market society is the society in which a market economy is situated; and “a market economy is an economic system controlled, regulated, and directed by markets alone; order in the production and distribution of goods is entrusted to this self-regulating mechanism...A market economy can only exist in a market society” (Polanyi, 1944, p. 68). Market society is the logical end of neoclassical economics, as Hungarian economist Karl Polanyi explained:

An economy of this kind derives from the expectation that human beings behave in such a way as to achieve maximum money gains. It assumes markets in which the supply of goods (including services) available at a definite price will equal demand at that price. It assumes the presence of money, which functions as purchasing power in the hands of its owners. Production will then be controlled by prices, for the profits of those who direct production will depend upon them; the distribution of the goods also will depend upon prices, for prices form incomes, and it is with the help of these incomes that the goods produced are distributed amongst the members of society. Under these assumptions order in the production and distribution of goods is ensured by prices alone (Polanyi, 1944, p. 68).

No pure market society has ever existed. However, the American political economy is a rough imitation, and benefits and suffers from the same characteristics of a true market society. Not only does the American system—reinforced by neoclassical economics—resemble a market society, but also it is modeled after, and often aspires to be, one.



## **Market Society fails reality and a better world**

Currently, energy efficiency is not happening to a great extent. A significant part of the problem lies in the dominant paradigm we are using to approach it. I believe that market society, as crafted by neoclassical economics, is undesirable because it does not achieve its own ends, its outcomes are dangerous and undesirable, and its ends are misguided.

### **Market Society doesn't achieve its own ends**

I will first explain the theoretical goals of market society, and then show how they are not achieved. Milton Friedman and F. A. Hayek best described the theoretical basis for market society—the values and ideas that underpin neoclassical economics. They believed that markets are necessary for what they deemed to be the highest end: freedom from coercion. At the center of their arguments is the belief that all coercion is bad, and the thing people want and need the most is freedom from coercion. They saw markets as the solution because markets separate economic power from political power, markets liberate people to make individual choices, and the labor market in particular gives all people a stake in society, through the commodification of their labor.

Friedman wrote, “if economic power is kept in separate hands from political power, it can serve as a check and a counter to political power” (Friedman, 1962, p. 16). He suggested that there are two main sources of power in society, political and economic. He feared a totalitarian state controlling both poles of power, and thus saw market society as a way to free the people from the complete concentration of power. One important and convincing argument he made is that to successfully organize against the state, one needs resources. If a society is communistic and all money comes directly from the

government into the hands of the people, it will be hard to amass the resources to incite a revolution, because it is not in the state's interest to fund its own overthrowing. The cost of change, he asserts, must be high enough to provide for a stable society, but low enough that with dedication, it is not prohibitive.

“Our freedom of choice,” Hayek explained, “in a competitive society rests on the fact that, if one person refuses to satisfy our wishes, we can turn to another” (1944, p. 69). Markets cannot be coercive, in Hayek's view, because all contracts can and should be mutually agreed upon. Unlike a democracy, personal decisions are not subject to the majority's will. Friedman explained,

An impersonal market separates economic activities from political views and protects men from being discriminated against in their economic activities for reasons that are irrelevant to their productivity-whether these reasons are associated with their views or their color. (1962, p. 21)

The last major point that Friedman and Hayek made about the need for market society, and self-regulated labor markets in particular, is that liberal labor markets provide everyone with what is needed for subsistence: the ability to sell one's labor for a wage. Because the state does not need to be involved, anyone who wants can look for and find (presuming they are able-bodied and there are jobs that pay a living wage available—two huge, overlooked assumptions) work, in order to put food on the table and clothes on their backs.

Unfortunately, the world that Friedman and Hayek set up—in which market society provides freedom from coercion, a check on political power, and the provision to

all people a means of subsistence—is a fantasy whose assumptions, simplifications, and misconceptions fundamentally undermine their theories. The ideals of market society and the true behavior, attitudes, and values of human beings are incompatible and often in direct conflict. Therefore, market society is never truly possible, specifically because markets are self-destructive and crowd out or undermine non-market values that are fundamental to society.

The political economist Albert O. Hirschman, in his self-destruction thesis of market society, asserted that the market undermines the moral foundations upon which it rests. Because a market economy promotes self-interest, it erodes values of altruism, sharing, empathy, and trust. “A set of extra-market or premarket values—such as honor, trust, loyalty, fairness—makes markets work better, even though market pressures keep undermining those values” (Kuttner, 1999, p. 64). E.F. Schumacher, author of the seminal work *Small Is Beautiful: A Study of Economics as if People Mattered*, also contended that the market “consumes the very basis on which it has been erected” (Schumacher, 1973, p. 19). In addition to consuming foundational values, the market expends the real assets that are at the center of the economy. This is evident in a market economy’s approach to natural resources: instead of working to conserve resources, the market encourages immediate extraction and use. E. F. Schumacher further stressed that our economy has miscategorized fossil fuels as income, when in fact, they should be considered capital. As income, the incentive is to dig them up, sell them, and burn them as quickly as possible, when in fact these precious and dangerous resources should be conserved to the greatest extent possible, and used as slowly and efficiently as possible, like capital.

In addition to consuming the values and resources that market society relies on, market society attempts to displace the institution that puts it in place and supports it: government. Karl Polanyi looked to history to show that where market society has been put in place to varying degrees, it has not come naturally or without deep conflict. The state must take a lead role in creating markets, as the collective action problem could never be overcome without state intervention: once markets are in place, the state must protect them. People, obviously the core of society, need protection from the innumerable dangers and evils of the world, but in a market society, the state's role shifts from protecting the people to protecting the market (Steinmo, 2010). This undermines the state's ability to serve its purpose. In sum, market society is not possible, because markets are self-destructive and erode the bases on which they are built. This is one of many ways in which neoclassical economics fails reality; the discipline encourages and relies on an impossible institution—market society.

### **The outcomes of Market Society are undesirable**

To the limited extent that market society is possible, it is undesirable. Market society benefits the most privileged in society, and systematically oppresses the less privileged. Marx focused on the labor market, and explained how it holds down the working class, benefiting the capitalistic class at the expense of wage laborers. He understood relative wealth to be more important than absolute wealth, because he focused on the power that wealth wields. He wrote that if capitalists find better means of production through increasing the share of capital in the production process, and thereby increase the wage of the workers, “the material position of the worker has improved, but at the cost of his [sic] social position” (Marx, 1986, p. 40). Because capitalists will

always take a large slice of the benefits from increased productivity, they will always benefit more than the wage-earners, and thus become relatively more wealthy and powerful.

Market society does not serve the needs of people nor the earth; in fact, it is destructive of the earth. Not only does this undermine market society, because of the dependence on natural resources of all sorts, but it is also bad for the earth, regardless of the market. To the first point, feminist economist Nancy Folbre pointed out, “Even short run estimates of the cost of specific forms of ecological disruption, such as higher ocean levels associated with global warming, or the loss of pollination services from disappearing honeybees, make market output look small” (2009, p. 310). The market depends on the earth, and is tiny compared to it. To the second point, a free market does not account for resource depletion or pollution, and thus works as an “unbridled force” of destruction (Hirschman, 1992, p. 113). Indeed, the only examples of communities sustainably managing common pool natural resources, economist Elinor Ostrom found, employ extra-market tools such as communication and cooperation (Folbre, 2009).

**Market Society’s ends are wrong.**

“The market is good for many things but not for employment and the good life”

—Hallvard Bakke (Quoted in Douthwaite, 1996, p. 27)

“Market reasoning smuggles in certain moral judgments, despite its claim to be value neutral,” wrote Sandel (2012, p. 103). In market society, freedom *from* is the highest value, with efficiency and possibly growth as other key values. These are not, however, the highest ends to all of humanity. For market society to flourish, the central values of markets and the prominent values of society must fully align. Love and

altruism, civic spirit and passion are all deeply ingrained and important to the health and happiness of people and societies, but do not fit into a market framework. Indeed, when one sees love and altruism as scarce resources, there are many perverse effects, and the world becomes a much scarier, lonelier, and less beautiful place.

Not only are the ends of market society wrong, but they also currently reign supreme. The hegemonic “imperial market”, as Kuttner referred to it, both crowds out other types of economic organization and silences any opposition to it. Schumacher expounded,

If an activity has been branded as uneconomic, its right to existence is not merely questioned but energetically denied. Anything that is found to be an impediment to economic growth is a shameful thing, and if people cling to it, they are thought of as either saboteurs or fools. Call a thing immoral or ugly, soul-destroying or a degradation of man, a peril to the peace of the world or to the well-being of future generations: as long as you have not shown it to be 'uneconomic' you have not really questioned its right to exist, grow, and prosper.

(Schumacher, 1973, p. 39)

Market society is the economic and social organization created and reflected by neoclassical economics. By understanding the shortcomings and dangers of market society—its failure at achieving its own ends, its poor outcomes, and its misguided ends—it is clear to see how neoclassical economics does not reflect reality, and how it limits people’s abilities to create a better reality. Thus, another framework is necessary.

## **An Alternative Framework: The Solidarity Economy**

In order to create sustainable, resilient communities in the face of climate destabilization and related issues, America must look to structures and systems beyond market society. There are many alternative economic frameworks, including Ecological Economics, Marxist Economics, Feminist Economics, to name a few. Like neoclassical economics, each framework has its strengths and weaknesses. One framework, the Solidarity Economy, pieces together many components of different fields of economics. In this section, I will discuss the Solidarity Economy framework and how it applies to enabling residential energy efficiency in Oberlin.

Though the Solidarity Economy framework has been widely used for some time in other countries, it is relatively new in the United States. As the editors of *Solidarity Economy: Building Alternatives for People and Planet* wrote, “Because the Solidarity Economy denotes a multiplicity of practices rather than a unified theory, universal definitions can be difficult to pin down.” However, a basic understanding follows:

This economy should be centered on human needs rather than an insatiable drive for profit. Solidarity Economy initiatives can also be loosely defined as practices and institutions on all levels and in all sectors of the economy that embody certain values and priorities: cooperation, sustainability, equality, democracy, justice, diversity, and local control (Lewis et al., 2008, p. 6).

Essentially, economics must be redefined, from the study of the allocation of scarce resources to the study of meeting human needs. To understand the importance of the

Solidary Economics framework, I will discuss the values that underlie the concept. Here, I will focus on:

1. People over profits
2. Prosperity and Fulfillment
3. Resilience and Sustainability
4. Democracy and Local Control
5. Cooperation
6. Equality, Justice and Diversity

### **People over Profits**

Modern economics and market society serve the needs of the most well off rather than those in need—“activities are primarily ways of making profits for shareholders rather than providing ways of life” (Douthwaite, 1996, p. 32). E.F. Schumacher took a “Buddhist” perspective on the economy, which allowed him to see modern economics very differently than his career as a coal industry accountant had taught him. Urging a shift from the interests of capital to those of people, he expressed that neoclassical economics “stand[s] the truth on its head by considering goods as more important than people and consumption as more important than creative activity. It means shifting the emphasis from the worker to the product of Work, that is, from the human to the sub-human” (Schumacher, 1973, p. 32). Instead, the Solidarity Economy centers the study of economics on people—all people. All analyses and judgments must first pass a basic test: is this good for a majority of people? Does it increase prosperity, equity, and justice?

### **Fulfillment in Life and Prosperity**

In our American Market Society, work is seen primarily as a way to earn a wage, with other benefits typically ignored. Schumacher explained, “Hence the ideal from the



point of view of the employer is to have output without employees, and the ideal from the point of view of the employee is to have income without employment” (1973, p. 51).

Marx discussed this in terms of estranged labor:

The fact that labor is *external* to the worker, i.e., it does not belong to his intrinsic nature; that in his work, therefore, he does not affirm himself but denies himself, does not feel content but unhappy, does not develop freely his physical and mental energy but mortifies his body and ruins his mind. The worker therefore only feels himself outside his work, and in his work feels outside himself. (Marx, 1844)

Work should be pursued for fulfillment and social relationships as well as a living wage.

“Work and leisure,” wrote Schumacher, “are complementary parts of the same living process and cannot be separated without destroying the joy of work and the bliss of leisure” (1973, p. 52).

### **Sustainability and Resilience**

We need an economy, a society, and a lifestyle “designed for permanence” (Schumacher, 1973, p. 19). Rather than consumption being the end of the economy, we need to value conservation. In particular, with the threat and reality of climate change, we must immediately and drastically reduce our use of fossil fuels. Schumacher stresses that nature has negative feedback loops or natural limits on everything. In the Solidarity Economy, systems must be designed with limits, countercyclical patterns, and negative feedback loops. I discuss putting this into practice in the physical barriers section of this paper.

## **Getting There: Building a Local Economy**

Creating strong local economies is at the heart of the Solidarity Economy. This thesis uncovers ways to strengthen the local economy, while simultaneously addressing the global climate crisis. The main reasons for building a local economy are:

1. Retained wealth and prosperity in the community and the local multiplier.
2. Increased resilience
3. Increased care for local resources
4. Increased accountability
5. Strengthened environmental and labor standards

## **Keeping wealth and promoting prosperity**

Michael Shuman, a leading thinker in the importance of localism, wrote, “The principal affliction of poor communities in the United States is not the absence of money, but its systematic exit” (Shuman, 1998, p. 107). Most communities today are dominated by big businesses. This means that the goods and services are probably being produced elsewhere, and shipped into the local community, and upper management positions in firms are probably in other places. Studies have been done in many cities to understand the importance of local business, and have shown that for every dollar spent in a local business, it creates 2.6 more jobs on average than in non-local business (Shuman, 2012, p. 19).

In an interview with Gar Alperowitz, Michael Shuman said, “Economic development currently counsels communities across the planet to attract and retain global business” (personal communication, March 2013). This is counter to the Solidarity Economy and to true community development, because global, and even national, corporations can, and do, leave whenever it makes sense for the bottom line (Shuman, 2012, p. 22). Local

businesses, because of their size, community ties, and resources tend to stay put, which keeps jobs put in the face of changing circumstances.

### **Resilience**

Resilience—the ability to prosper amid changing and unfavorable circumstances—is a key reason to build local economies. Primary inputs, such as food and energy are necessary for survival and simultaneously extremely volatile. Local economies can, and should, according to Richard Douthwaite, author of *Short Circuit: Strengthening Local Economies for Security in an Unstable World*, produce the bulk of their primary inputs, and shelter themselves from the price and quality volatility of international food and energy markets. Local economies can also provide backups to the important regional systems—such as food and energy—that society requires.

Local economies and communities can also foster institutions necessary for community resilience. These can include knowledge sharing, time banking, and cooperative production and use of resources and goods.

### **Resource Conservation**

If communities have control over the extraction and use of local resources, Douthwaite contended, they will protect and conserve them because communities, unlike multinational corporations and foreign countries, have a vested interest in those resources.

### **Accountability**

Enterprises in local communities are much more accountable to the community than non-local entities. This is true for banks, businesses, councils and government. Shuman explained that small businesses know what the community wants, and can be

responsive to those wants and needs. When people have an issue with a local business, they can simply walk in and talk to the manager or owner, whereas big businesses keep the executives far out of reach from the consumers and those affected by the business. Local banks and investors can actually meet the people and businesses they finance. Also, these people often live near each other and interact in many social situations outside of formal meetings.

### **Improved Labor and Environmental Standards**

Environmental sustainability and economic fairness and equality are values central in the Solidarity Economy. Shuman paraphrased a point made in one of Alperowitz's books, *Rebuilding America*, saying:

If you have a community economy that depends on footloose global companies, any time you raise environmental labor standards it's very easy for these companies to flee and decimate a local economy. This gives them huge political leverage to thwart environmental progress. If you have a higher percentage of businesses that are locally owned and rooted, the local political sphere can raise environmental and labor standards with confidence that the existing businesses will adapt rather than flee.

### **Conclusions**

The current capitalist market society is a dangerous system, and the neo-classical framework in which it is legitimized only reflects a partial reality, and does not embody humanistic values of prosperity, equity, sustainability or justice. The solidarity economy

that centers the well being of people and planet offers a more realistic, useful approach for creating workable solutions to humanity's current problems. A central tenant of the solidarity economy is the importance and value of prosperous, resilient local communities. Working within this framework, this thesis will focus on how to strengthen our local economy while also mitigating the community's contribution to climate change.

## **Methods**

The nature of this project required a mixed method approach. I have employed three main methods: literature review, primary source review, and fieldwork.

### **Literature Review**

To write this document, I reviewed several academic literatures. For the background and motivation section, I reviewed the political economy literature, with a focus on leftist political economists such as Karl Polanyi, Robert Kuttner, and Nancy Folbre.

For the social and psychological section, I extensively reviewed the psychological literature, with a focus on social and environmental psychology. Additionally, I reviewed the behavioral economics literature that focuses primarily on pro-environmental behavior.

The work on local economies, particularly Michael Shuman and Gar Alperowitz, heavily influenced the section on addressing physical barriers.

### **Primary Sources**

Each section of this thesis draws heavily on primary documents. Examples of primary documents include case studies from efficiency programs throughout the country, action plans for Oberlin and Lorain County, and technical documents on how to safely wire homes. The Oberlin-specific documents are mostly reports made for the

Oberlin Project. Other documents were found through Internet searches and citation following. I relied heavily on Google, but also relied on trusted websites for pertinent issues; for example, I looked to the US Federation of Worker Cooperatives for information about worker cooperatives.

## **Fieldwork**

The bulk of the fieldwork done for this project was interviews. Key stakeholders in Oberlin were the primary subjects. This included individuals working for the two utilities, OMLPS and Columbia Gas, a city council member, the Energy Advocate, and those involved in the Oberlin Project. To do these interviews, I sought and received approval from the Institutional Review Board, and then scheduled interviews. All interviews were recorded with the written consent of the participant. Interviews typically lasted one hour, and took place either in the subject's office or in a public place of the participant's choosing.

## **Barriers to Financing Energy Efficiency**

### **Overview**

Typically, when energy efficiency is discussed, the conversation immediately moves to money: *Is efficiency worth it? How do you pay for efficiency? If you want more people to retrofit their homes, you need to provide better financing.* This view harkens the “imperial market” that Kuttner discussed, as I mention in the introduction. Talk of economics supersedes all other concerns, and blinds people to deeper complexities. One objective of this thesis is to critically examine the assumption that finance is the most important barrier.

This is not to say that finance is not an important component of enabling residential energy efficiency. Many efficiency retrofits are quite costly, such as insulating walls and attics. The nature of efficiency retrofits implies that costs are borne at the outset, and the benefits of lower energy bills are realized slowly over a period of time. Because financing allows a person or entity to borrow money and pay it back over a long time-frame, it is a good tool to use for energy efficiency, smoothing costs and benefits over time.

To be sure, there could be more financing available for energy efficiency in Oberlin. However, after careful consideration, I conclude that it is not a good use of resources to develop new finance mechanisms in Oberlin. In the section that follows, I provide significant detail in order to fully understand the limitations of focusing on financing for energy efficiency. As Oberlin and other communities consider ways to enable residential energy efficiency, this section should be helpful in guiding the conversation. I discuss two main arguments against investing in more financing programs: finance is not the primary barrier to energy efficiency, and even if it were, the economics of developing new financing mechanisms are preventatively challenging. Below, I discuss existing financing options and demand for efficiency; the following sections describe the barriers to creating new finance mechanisms and discuss next steps.

## **Financing is Not the Main Barrier**

Financing is not currently the limiting factor for energy efficiency. This is because Oberlin already has many financing options for energy efficiency, there is very little demand for efficiency, and because other barriers are more pressing than financing.

## **Existing Financing**

A lot of hard work has gone into creating successful financing programs in Oberlin. There are currently two robust programs, Efficiency \$mart and the Columbia Gas suite of programs.

### **Efficiency \$mart**

Oberlin contracts with Efficiency \$mart, a program of the American Municipal Power, Inc. and administered by the Vermont Energy Investment Corporation (VEIC). While the program is primarily for the commercial sector, it serves the residential market as well. This is done through a series of rebates on new products, such as efficient washing machines, boilers, etc. To date, 101 rebates have been distributed since the beginning of 2011 (Personal communication, November, 2013). Oberlin City Council voted to double the value of the rebates, making them generous indeed. This program is administered by Providing Oberlin With Efficiency Responsibly (POWER), discussed at length in the social/psychological section of this document.

### **Columbia Gas**

Columbia Gas, the natural gas provider to Oberlin, has an impressive suite of energy efficiency financing programs. In 2009, Ohio Senate Bill 221 established an energy efficiency portfolio standard for public utilities. This ordinance, overseen by the Public Utilities Commission of Ohio, requires that utilities provide a certain level of energy efficiency financing to their customers as part of their services. A small portion of customers' monthly service bill covers the cost of these programs. Currently, Columbia



Gas offers three programs in Oberlin: Simple Energy Solutions, Home Performance Solutions, and Warm Choice.

*Simple Energy Solutions* is the most basic program, offering ten dollar rebates on efficient showerheads and twenty-five dollar rebates on programmable thermostats. This program, which currently brings the price of a programmable thermostat to under five dollars, is available to all Columbia Gas customers.

*Home Performance Solutions* is Columbia Gas' most comprehensive program. Available to all costumers, the program first offers a comprehensive energy audit (market value of over \$300) for \$50, or \$20 for income-qualified customers. After the audit, customers are eligible for discounts of up to 70% off, with additional discounts available, on the work recommended by the audit. A contractor on Columbia Gas' list of approved contractors must perform the work.

*Warm Choice* is much like the Home Performance Solutions program, but is only available to lower-income residents. It offers similar services—an energy audit and installation of energy efficiency equipment, from insulation to a new furnace—at little or no cost to the resident.

The Columbia Gas programs are major assets to the community, but there is no guarantee that they will be consistently available. They exist due to legislation, which means that they can be reversed at any point.

This is an impressive array of programs, though none are comprehensive and each has its limitations. It would be prudent for Oberlin to work to take full advantage of these programs, particularly those administered by Columbia Gas, before developing new ones.

## **Demand**

One reason why the existing programs have not been fully exploited, and why a new finance mechanism is not a good solution to pursue, is that demand for energy efficiency in Oberlin is exceedingly low. This is not unique to Oberlin; in fact, Borgeson et. al. (2012) wrote, “in most markets, demand – not access to affordable capital – has been the primary barrier to market growth” (p. 6). The authors likened financing energy efficiency to a car loan—the financing is only important once the “product” is desired, be it a car or a more efficient home. As many have noticed, it is common for people to go into credit card debt for a new TV or clothing, but rare for energy efficiency. This highlights the need for a strong social and psychological approach to energy efficiency, as described in the social/psychological section.

## **Economic Barriers to Energy Efficiency Financing**

In the previous section, I make the argument that more finance is not needed in Oberlin. This could change—demand could increase, the Columbia Gas programs could be scaled back, etc. However, even in light of that potential, limited resources should not be used to create new finance mechanisms. This is because there are significant economic realities that make dedicated finance mechanisms for residential energy efficiency very difficult in Oberlin. These barriers can be categorized in three ways: the size of Oberlin; the challenges of financing energy efficiency, particularly for lower income residents; and the current economic climate in Oberlin and the nation.

### **Current Realities Are Prohibitive**

Now is an especially difficult time to set up a finance mechanism for residential energy efficiency because federal and state funds are drying up, and, counter intuitively, because interest rates are so low.

According to the case studies (included in appendix) of two successful energy efficiency financing programs, Murray City, OH, and Portland Oregon, a strong public-private partnership is a key to success (Gerdes, 2013). A good use of public dollars is to leverage private investments. This can be done by guaranteeing a certain amount of public investment to encourage private investors, or through loan guarantees—where the public entity assumes the debt obligation in case of default, among other options.

Unfortunately, public dollars, both federal and state, are slowing. The Murray City, OH program, along with many other efficiency programs, was originally funded by the American Recovery and Reinvestment Act (the stimulus package) of 2008, which disbursed over four billion dollars in aid for energy efficiency (HUD, 2013). This major source of finance is now tapped out. The stimulus package is not the only source of federal investment in energy efficiency, but as the recovery continues to be slow and conservatives continue to advocate austerity, federal and state support for efficiency is drying up.

Low interest rates are, ironically, another reason why new a new finance mechanism should not be created. A new fund could not keep interest rates as low as a standard loan, so Oberlin should point residents to loans that already exist instead of creating new ones. Right now, members of Lormet Community Credit Union, a Lorain County credit union, can take out a home equity line of credit for as low as 2.99% APR, with 15 years to pay back the loan. The credit union also offers Share Secured Loans—where the loan is secured by the borrower's savings account—with an APR of 3.29% for five years (Lormet, 2013). It is nearly impossible for a revolving loan fund for energy efficiency to compete with those rates—so residents would be better off going for a

standard loan product from their bank than taking advantage of an energy efficiency loan. In fact, the average interest rate for energy efficiency loans across the country is 5.3%, including several programs with no-interest loans (Hayes et al., 2011, p. 2). This is not an argument against taking out a loan for energy efficiency, rather, the low interest rates available in banks is an argument against setting up another loan fund, as the bank can do a better job providing the service than a new fund could do.

### **Size Limitations**

Setting up a robust revolving loan fund, or other financing mechanism, is not cheap. As Doug McMillan, Energy Services and Sustainability Initiatives Manager with Oberlin Municipal Light and Power System (OMLPS), explained in an interview, setting up a loan fund can cost as much as \$1,400 to put together a single loan. This cost includes administrative fees, the cost of reviewing credit worthiness of the person and the project, and legal fees. These issues also require significant staff time. If Oberlin were to set up a dedicated finance mechanism, it would have to be administered by at least one staff person—a huge cost for a program that would have limited reach. It would also be costly if the city were not to administer the fund, but rather contract with a bank or credit union. The city is too small to take advantage of economies of scale. Revolving loan funds work by making loans, waiting for those to be paid back with interest, and using the new capital to make another loan. Therefore, the more loans that are made, the more that can be made in the future. Oberlin, with only 2,865 households in total (City-Data.com, 2013), cannot support a robust loan fund alone.

## **Limits of Debt Financing**

If a loan fund were to be successful in Oberlin, it would have to serve many different demographics. However, low-income residents—and others—may not have good enough credit scores to qualify for a standard loan. Therefore it must be unsecured, which drives the interest rate up significantly. While some programs have been able to use public and private grants to buy down interest rates to zero, including Connecticut HOME, Kansas How\$mart, and Mass HEAT, the buydown was reported to have been “exorbitantly expensive” (Hayes et al., 2011, p. 6). As I show in later sections, there are better potential investments of such resources.

People are typically averse to taking out loans, due to their riskiness and cognitive and emotional burdens. There are many ways to frame a loan such that it does not seem like a loan to consumers. However, they are still loans, and have the same preventative barriers as other types of loans. The two most commonly suggested—Property Assessed Clean Energy (PACE) Financing and On-Bill Pay As You Save (PAYS)—change the repayment method, thereby reducing the cognitive, logistical and emotional burdens of a loan. PACE financing is administered by the municipal government or utility. The municipality secures bonds, and then makes loans to residents to do efficiency and renewable energy. The loan is then repaid over a long period of time through an assessment on the property tax. One major benefit of PACE financing is the ability to connect the loan to the property, not the resident. This alleviates a major barrier to energy efficiency: uncertainty of length of residence.

On-bill financing connects the repayment of the loan to the energy bill. The utility can either administer the loan or just the repayment of the loan. The payback of

On-Bill is an monthly energy efficiency service charge. This too can be connected to the resident or the property.

These two repayment systems—PACE and On-Bill—are intellectually attractive. Indeed, they are the centerpieces of the Oberlin Climate Action Plan's Financing for Residential Energy Efficiency section. However, it should be clear that these are both debt-financing mechanisms, and face the same challenges as any other debt-finance mechanism.

### **The Secondary Market**

The limited ability to sell energy efficiency loans on a secondary market is often seen as a barrier to robust finance programs. To sell loans on a secondary market, the financial institution responsible for the loan sells the loan to another financial institution, usually a large bank or Fannie Mae. These loans are then securitized—pooled with many other debts of different sorts—and traded publicly. While this practice adds a lot of capital to the system, and may make a loan fund viable in the short term, it is too risky to be sustainable. The failure of this type of security—mortgage backed securities in particular—were largely responsible for the 2008 world financial meltdown. Essentially, the secondary market puts less wealthy people's prosperity on the line in search of greater wealth for the wealthy. A program developing energy efficiency opportunities, working towards environmental and economic justice, cannot be involved in such an unjust practice.

### **Moving Forward**

The most successful programs that address residential energy efficiency take a broad-based approach, with components designed to address all significant barriers to

retrofitting homes. Therefore, finance is a key component to a successful, holistic approach. The point of the above section is not to suggest that programs or cities should not have financing available to residential energy efficiency; rather that at this point in time, developing further financing is not a good use of scarce resources. However, this only holds as long as the programs, particularly the Columbia Gas programs, continue. Thus, particular attention to the legislation around energy efficiency financing, particularly by public utilities, must be paid. Indeed, effort should be invested in pushing for more permanent, predictable residential energy efficiency subsidies.

In this section, I suggest that energy efficiency is not the limiting factor to realizing broad-scale uptake of energy efficiency retrofits and contend that demand for retrofits serves as a greater barrier. I contend that Oberlin already has good programs; that finance does not drive demand; that current market rates for loans are too low for a new mechanism to be competitive, and that Oberlin is too small to make a finance mechanism feasible. The following section discusses the social and psychological components of energy efficiency—the demand side of efficiency.

## **Addressing Social and Psychological Barriers**

A lack of demand, not finance, keeps the uptake rate of energy efficiency low in Oberlin and most other communities. This section reviews the psychological literature on behavior, and then unpacks the behavioral barriers to energy efficiency. Finally, this section discusses a successful approach to lessening social and psychological barriers to residential energy efficiency, the Energy Advocate.

## **Two Theories Of Behavior**

Understanding what social and psychological barriers to energy efficiency exist and how to overcome them requires understanding why people behave the way that they do. Here, I review two theories of behavior: Paul Stern's Theory of Environmentally Significant Behavior, which focuses on behaviors that have an impact on the environment, and Icek Ajzen's Theory of Planned Behavior, which explains the components of behavioral decision making.

### **Value Belief Norm Theory**

The Theory of Environmentally Significant Behavior (Stern, 2000)—a value-belief-norm theory—suggests that proenvironmental beliefs are activated when something a person cares about is threatened, and that person feels as though they have the ability to change it. Stern suggests an essentially linear model, in which values influence beliefs, which are then mediated by personal norms of responsibility, motivating and guiding behavior.

Many values can influence pro-environmental beliefs. Biospheric values—a concern for the environment; altruistic values, such as a concern for future generations or those on the front lines of environmental issues; and egoistic values of saving money or being more comfortable can all lead a person to consider engaging in pro-environmental behavior.

The next step in Stern's theory is cognition—making connections between values and actions. He refers to this as “awareness of adverse conditions.” This awareness comes from realizing that a value that one holds—be it biospheric, altruistic or egoistic—is at risk due to behaviors and environmental conditions.



After one feels as though something she cares about is at risk, she must feel as though she has the ability to change it. Efficacy has two essential components. Stern emphasizes the first, ascription of responsibility: *I must deal with this*. The second is empowerment: *I can deal with this*.

Once a person has realized that something she cares about is threatened, and believes she can change that, she must decide whether or not to act. Personal norms either motivate or inhibit action.

### **Theory of Planned Behavior**

While much can be gleaned from Stern's value belief norm theory, Icek Ajzen's Theory of Planned Behavior adds necessary complexity and clarity to an understanding of behavior. Ajzen explained that the components involved in deciding to engage in a particular behavior:

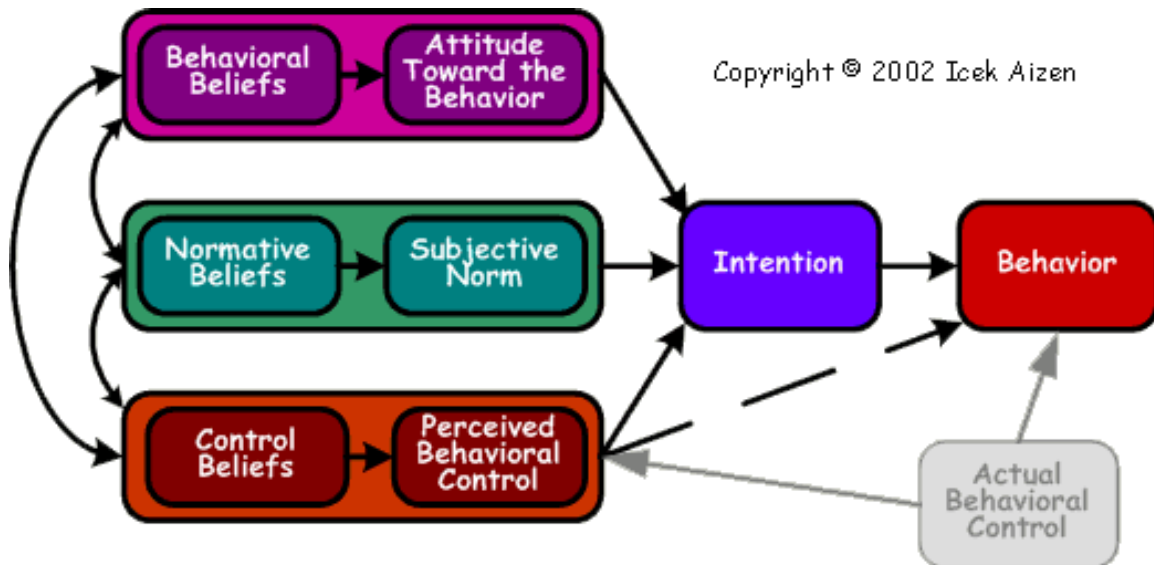
...Include beliefs about the likely consequences of success and failure, the perceived probabilities of success and failure, normative beliefs regarding important referents, and motivations to comply with these referents.

[A person] will be successful in his attempt if he [sic] has sufficient control over internal and external factors, which, in addition to effort, also influence attainment of the behavioral goal." (p. 36)

In other words, a person will decide to attempt a behavior when the consequences of success are favorable, and the consequences of failure undesirable, when success is

perceived as likely and failure is perceived as unlikely, and when there is social acceptance or pressure to pursue the behavior.

Figure 1. The Theory of Planned Behavior



[http://www.utwente.nl/cw/theorieenoverzicht/theory%20clusters/health%20communication/theory\\_planned\\_behavior.doc/](http://www.utwente.nl/cw/theorieenoverzicht/theory%20clusters/health%20communication/theory_planned_behavior.doc/)

As Figure 1 shows, there are three basic components to the theory: Beliefs about consequences of behavior (attitude), perception of probabilities and outcomes of success or failure of behavioral achievement (efficacy), and social norms surrounding behavior.

This theory obviously has much overlap with the value belief norm theory presented above, cognition and efficacy in particular. It has three main contributions to the understanding of behavior: it adds a complexity by removing the linear aspect, discusses attitudes, and has a more in depth discussion of social norms.

Attitude, how the person feels about the behavior under consideration, has much overlap with cognition. However, it adds an emotional aspect: even if a person *knows* that she should insulate her home, she may not *feel* positively about doing it.

Social norms also play an important role in determining behavior. There are two types of norms: descriptive and injunctive. Descriptive norms are those that show how things are normally done, and are generally value-neutral. On the other hand, injunctive norms show how things *should* be done (McKenzie-Mohr, 2011). For example, a descriptive norm might be not wearing a bicycle helmet—as you bike around town, most people are not wearing helmets; it’s the norm. An injunctive norm would be someone, particularly someone popular and well respected, wearing a helmet, which says, this is the new norm. Ajzen also explained that the relative weights of the personal versus social norms are variable between people and behaviors. In other words, some people care more than others what other people think, and some behaviors are more influenced by norms than others.

## **Social and Psychological Barriers**

Stern and Ajzen’s theories provide a solid foundation for assessing behavioral barriers to residential energy efficiency. In this section, I will discuss behavior as it relates to energy efficiency, and then evaluate the specific barriers to these behaviors.

Over 200 distinct behaviors make up the broad classification of residential energy efficiency (McKenzie-Mohr, 2011, p. 12). These include everything from choosing a contractor to purchasing caulk for windows to properly programming a programmable thermostat. Each different behavior has its own set of challenges and barriers.

Additionally, each end-state behavior is comprised of many non end-state behaviors. An end-state behavior is one that actually has an effect on the human and ecological environment. For example, consider the fairly simple pro-environmental behavior of air-sealing the windows in a living room. The end-state behavior is applying caulk to the

window, because it is the application of caulk that will make the home more efficient. To engage in the end-state behavior, though, one must first engage in many non end-state behaviors, such as buying caulk, learning how to use a caulk gun, and preparing the window for caulk application.

To further complicate matters, each of these behaviors, end-state or not, are divisible behaviors, comprised of many non-divisible behaviors. A divisible behavior is one that can be broken down into several non-divisible behaviors. For example, the behavior of buying caulk is divisible into several non-divisible behaviors, including getting into one's car, turning it on, driving to the store, asking the clerk to point one to the caulk, deciding between products and prices, asking the clerk for advice, paying for the product, and driving home.

Each of these non-divisible behaviors has its own set of barriers. Drawing on Stern and Ajzen, I will discuss these barriers in terms of attitudes, cognition, efficacy, and norms.

### **Attitudes**

Attitudes towards a behavior can serve as a major barrier to implementing efficiency retrofits. Even for individuals with a pro-environmental general attitude, the feelings towards particular non-divisible behaviors that comprise retrofitting can be very negative. Continuing the caulk example, even for those with a positive attitude towards caulking their windows, attitudes towards cleaning up caulk or squeezing a caulk gun can be very negative.

An important attitudinal barrier to energy efficiency is fear. Homeowners may be worried about making a bad decision, losing money, or damaging their house.

Additionally, it may be uncomfortable to have strangers in one's home, particularly if they are auditing the house by using unrecognizable technologies to photograph and evaluate the house. There may also be a feeling of disenfranchisement from "the system," resulting in distrust and disinterest in having any extra interaction with what is perceived as "the system." According to Greg Jones, Oberlin's Energy Advocate (a position I discuss in detail below), a major fear is that those doing efficiency work—the auditors, advocates, or contractors—could report residents for non-efficiency related violations, such as exceeding occupation limits or violating fire codes.

## **Cognition**

### **Cognitive Capacity and Overload**

Because of the sheer number of behaviors involved in residential energy efficiency, cognition—a person's understanding of, and thinking around a behavior—can serve as a major barrier. This is largely because there are a large number of decisions to be made; and with each one there can be confusion, lack of information, misinformation, etc. Many people are ignorant to the options and benefits of residential energy efficiency. A large cognitive burden exists in deciding what actions to take, which contractors to hire, etc. Many of the steps towards making a home more efficient can be extremely confusing.

### *Heuristics*

People's ability to make rational decisions is often limited by cognitive overload—a lack of information, time, experience, or know-how. This causes people to

rely on other methods of decision making, such as heuristics, where people follow a known, simple formula for decision making.

A person may employ one or more heuristic while engaging with energy efficiency. A satisficing heuristic is when the first option that satisfies the person, even if it's not the best option, is chosen; for example choosing the first contractor under a certain price threshold instead of finding the cheapest or the best. When a person will choose one option among many because she recognizes the option, she's using a recognition heuristic. This is common with technologies or contractors—I've heard of caulking but not blowing insulation, so I'll choose caulking. An elimination heuristic narrows a person's options by eliminating choices based on a single attribute. For example, these options cost more than my budget, so I'll eliminate them, without regard to the other attributes of the options. An availability heuristic is where people will choose an option that is available here and now, even if choosing one that is of better quality but will take time to acquire or achieve also is presented; for example, I could install a thermostat today, but I'd have to wait to install more significant retrofits. An emotional heuristic, where the feelings one has outweighs all other metrics for decision-making, could also be used. For example, I once tried to caulk my windows and it was really frustrating, so I won't caulk my windows even though it's a good investment. These are just a few of many possible heuristics, and heuristics are only one of many ways that people deal with cognitive overload.

### **Limits of Rationality**

Even though the idea that people act rationally is one of neoclassical economics' fundamental assumptions, it is demonstrably (and intuitively) false. Two common

deviations from rationality relevant to energy efficiency are discounting inconsistencies and reference effects.

### *Discounting Inconsistencies*

The discount rate is the rate at which value decreases over time. In other words, money is worth more to a person today than in the future, because they can use it now, and don't have to wait. If, say, a person would exchange receiving \$110 in a year with receiving \$100 today, her discount rate is 10%. Traditional neo-classical economics assumes that people maintain a constant discount rate, and that the market, through interest rates, dictates the rate. However, in reality, people have differing discount rates for different things, and the rate does not stay constant through time. Discount rates are particularly susceptible to the timing of costs and benefits; when both costs and benefits happen in the future, people tend to be farsighted (have a low discount rate), but much more shortsighted if some costs or benefits are immediate and others farther in the future. This has a major impact on energy efficiency, where the costs are typically borne at the outset, and the benefits or lower energy bills and comfort are realized in the long term.

### *Reference Effects*

Humans take advantage of reference points to ease their decision-making. However, this limits the ability to make rational decisions. People tend to rely on anchors, where they will evaluate a decision or situation based on how they've experienced it before. An example of how reference effects could affect energy efficiency is that people's expectation of the cost of their energy bill is anchored to how much they currently pay. Thus, they may be more willing to pay a continue to pay higher

bill, than spend money on something that will bring down their bill, since they are used to spending that much on energy but not retrofits, which have a much larger up-front cost.

## **Norms**

Both Ajzen and Stern emphasize how norms affect behavior. It is difficult for energy retrofits to lead to the formation of injunctive norms, since they are typically out of sight—when a visitor comes to a home with retrofits, they don't know it, and don't see a difference. Unfortunately, most descriptive norms do not encourage energy efficiency—people see energy waste all around them.

## **Overcoming Social and Psychological Barriers**

While neoclassical economics was somewhat relevant in discussing the barriers to financing residential energy efficiency, the framework does not help understand social and psychological barriers. This is largely because a fundamental assumption of neoclassical economics is that people act rationally; which the previous section showed is a ludicrous assumption. Although social and psychological barriers are deeply ingrained, they can be overcome. This section discusses the theoretical strategies for overcoming these barriers.

## **Key Psychological Leverage Points**

### *Intervention Points From Value-Belief-Norm Theory*

Paul Stern's value-belief-norm theory suggests that proenvironmental beliefs are activated when something a person cares about is threatened, and that person feels as though they have the ability to change it. This provides several intervention points: First, a person must care about something—anything from one's children, to one's paycheck, to the environment—that is threatened by excess energy consumption, then make the



connection between that thing and energy efficiency, and then the person must feel efficacious to address the issue.

### *Values*

Proenvironmental beliefs—essentially a concern for the environment, can develop in many ways. This idea, the inextricable connection between humans and nature, has been studied and tested in many ways. Dunlap and Van Liere, (1978) articulated a New Environmental Paradigm, suggesting a worldview that recognizes humans' interdependence with the natural world. This idea, of the inextricable connection between humans and nature, has been studied and tested in many ways. Frantz and Mayer (2004) created the Connectedness to Nature scale, which measures people's personal connections with nature. Extensive research shows that all of these measure predict proenvironmental behavior. In the VBN theory, this belief can stem from many values, including, a biospheric value (Stern 2000, p. 414). However, proenvironmental motivation can come also from altruistic or even egoistic values of justice for others, or self-preservation and prosperity, respectively. Indeed, Schultz (2001) found that concern for the environment stems from three value classifications—the self (egoism), other people (altruism) and the earth (biospherism) (p. 335).

For people to feel as though something they value is being threatened in the context of residential energy efficiency, climate change and related issues must be made salient; and the connection back to energy efficiency needs to be made. While information can be helpful in this, it is likely that more emotion-based campaigns around stories are more effective. Alternatively, the value of efficiency can be made salient by

focusing on health and comfort of the home, instead of the more abstract idea of climate change.

### *Efficacy*

In the value-belief-norm theory, a key belief is the ability to make a change to prevent a negative outcome (efficacy). In order to act on a proenvironmental belief, a person must believe that they can make a change. This suggests that helping people feel efficacious can have a major effect on overcoming social barriers to energy efficiency. Empowering residents is effective for several reasons. Firstly, providing people with resources (financial, cultural, social, and/or physical) is a direct way to increase empowerment, and will thus be more likely to take action. However, empowerment goes well beyond having the necessary resources, and can come in many ways besides having more resources. Feelings of agency, confidence, and control can increase efficacy. The experience of being successful in a similar venture can empower people to initiate other behaviors in the future, as can the experience of achieving a small goal that leads to larger goals. Additionally, because people desire consistency, if they believe that they cannot do something, they won't even try to do it, because succeeding would be inconsistent with their perception of lack of self-efficacy (Wilson, 2007, p. 177).

Environmental psychologist Doug McKenzie-Mohr's book, *Fostering Sustainable Behavior: An Introduction to Community Based Social Marketing*, contributes two key points to this discussion of psychological leverage points. First, he discusses how to choose behaviors to target in order to get the most people to engage in energy efficiency, stressing that each behavior has its own set of barriers. Second, he discusses how to leverage social norms.

### *Targeting Behaviors*

As I previously discussed, there are over 200 behaviors involved in residential energy efficiency alone. Since not all behaviors are equally efficacious or achievable, McKenzie-Mohr's Community Based Social Marketing has created a system for identifying behaviors to target. The approach requires that the targeted behaviors be non-divisible and end-state behaviors, as previously discussed. Impact—how much will the intervention actually achieve the goal; probability—how likely is it that the target population will make the behavior change; and penetration—how many people have already made the change, and how many people can still make the change, must also be evaluated. Once the appropriate behaviors are selected, the barriers and benefits to changing each target behavior must be identified (keeping in mind that each behavior has different barriers).

### *Norm Setting*

As discussed in the barriers section, positive social norms are difficult to set for energy efficiency, since it is out-of-sight, out-of-mind. However, the installation period has been regarded as an important norm-setting time: neighbors see that work is being done on a house, often with interesting equipment, and become interested in doing work in their own homes from there. McKenzie-Mohr also suggests engaging community leaders in high visibility efficiency projects, to help set injunctive norms around residential energy efficiency.

## **The Energy Advocate**

Clearly, social barriers are a major impediment to increasing levels of residential energy efficiency. Now that I have laid out the barriers and general approaches to

overcoming them, I will discuss how communities can, and have, put ideas into practice. One strategy that has been successful in Oberlin and elsewhere is the Energy Advocate. The Energy Advocate is a position charged with working with local residents to help them engage in residential energy efficiency. This section will explain and analyze the position's ability to address the barriers identified above, and discuss how it can be expanded in Oberlin and beyond.

### **The Energy Advocate's Role**

The Energy Advocate's role is to help residents successfully pursue energy efficiency in their homes, to be a "caseworker" for energy efficiency. Important functions of an energy advocate are outreach, making residents comfortable throughout the process, advising residents on decisions, and following up to ensure long-term success. While the Energy Advocate position changes somewhat from program to program, the basic roles and responsibilities, discussed below, are quite consistent.

#### *Outreach*

Some Energy Advocates do cold calls. For example, Clean Energy Works Portland "pre-screened to find homes likely to achieve the requisite energy savings and to find those customers most willing to act quickly" (ACEEE, 2011, p. 3). Other common avenues for outreach are community social events, town hall meetings, and homeowner gatherings. These venues are useful because the Advocate can talk to many people at the same time, and have the residents discuss the ideas together, building social support for the idea of efficiency.

#### *Walk Throughs*

A major responsibility of the Energy Advocate is to meet with residents and walk through their homes. In many cases, this walk through is primarily a conversation with the resident; to discuss the available programs and make them feel comfortable. The process, from audit to installation completion, is explained. In some programs, the Advocate actually performs the audit, but in many, including Oberlin's, the audit is done by outside contractors, and the Advocate is there more as a support. Because the Advocate actually walks through the home, she is able to provide information particular to the individual home, and has time to answer questions, discuss options, etc.

#### *Evaluation of Audit*

Often, a resident will have an audit performed, and not know where to go from there. The audit has lots of numbers and recommendations that can be hard to follow and prioritize. The Energy Advocate will meet with the resident to go over the audit. This is often a point where the advocate will use his or her expertise to make further recommendations, such as which actions should be taken, to the resident.

#### *Connecting to Resources*

Particularly in communities without a streamlined process like Columbia Gas' programs, the Advocate helps residents connect with resources. This can happen at any stage of the process, from finding a consultant to do the audit, to finding an appropriate contractor to do the work, to finding technical and financial resources available to the resident (City of Madison, WI, 2013).

#### *Helping with Application Process*

For communities with programs such as Columbia Gas', the Energy Advocate can help residents with the often-complicated application process. Oberlin residents report

that for low-income residents, the process can be harrowing due to increased paperwork and verification processes. The Advocate can sit down with residents and help them fill out their forms to overcome this barrier.

### *Follow Up*

The Energy Advocate is responsible for following up with residents. This includes data collection about what work was done and how, as well as continued support and encouragement to move forward with the next step, if work has not been done. This step keeps both the organization and the resident accountable.

### **Energy Advocates Across the Country**

The Energy Advocate position exists in several localities to date. The most prominent examples, besides Oberlin, include cities in Oregon and Wisconsin. It appears as though the idea started in Portland, OR, in the Clean Energy Works Portland (CEWP) program. The initial phase of the program set a target of retrofitting 500 homes in the first year. It was wildly successful—the conversion rate was 66%. This success came from a holistic approach to energy efficiency, including Energy Advocates, financing, vetted contractors, and on bill financing (ACEEE, 2011, p. 1). Another factor contributing to the success of the pilot program was seeking out and focusing those residents most likely to follow through with retrofits.

Several programs in Wisconsin have employed Energy Advocates as part of their approach. Each has had different success levels, but most were relatively high, averaging a 57% conversion rate. Unfortunately, most programs were federally funded, and ended in 2011 or 2012 (Cunningham and Hannigan, 2013).

## **The Benefits of an Energy Advocate**

The Energy Advocate can be a useful tool to alleviating many of the social and psychological barriers discussed above, primarily through increasing information, decreasing cognitive overload, increasing empowerment, increasing emotional comfort, and motivation.

Information alone is not enough to convince a person to engage in residential energy efficiency (McKenzie-Mohr, 2011). However, it is an important component of a holistic approach to residential energy efficiency. The Energy Advocate can provide information about the myriad options and ways to navigate them. In many communities, there is a bewildering array of choices to be made around efficiency retrofits. In Oberlin, there are at least four programs offered by Columbia Gas alone. It is challenging for residents to navigate the different options, and the Energy Advocate has a large role in helping residents understand the possibilities.

Efficacy is an enormous component of overcoming barriers to energy efficiency. A key role of the advocate is to help residents feel as though they can, in fact, do efficiency upgrades in their homes. The Energy Advocate is valuable for increasing residents' feelings of efficacy. This is done primarily through "intensive hand holding" of residents (ACEEE, 2011, p. 1). This hand holding can come in many forms, but examples include following up with the contractor to get the status of paperwork, going over price quotes and energy audits in detail and providing answering questions, or sitting down for a cup of coffee to discuss the emotional experience of attempting to retrofit a home.

## **The Energy Advocate program in Oberlin**

### **History**

Providing Oberlin With Efficiency Responsibly, or POWER, is an Oberlin-based grassroots non-profit founded in 2008. In 2007, the City of Oberlin engaged in a contentious debate about whether to sign long-term contract to build a new coal-fired electric generation facility, in favor of moving towards renewable energy. POWER was started as a response to this controversy, in order to link economic justice and environmental concerns. To do this, the organization works to help low-income Oberlin residents achieve energy efficiency improvements in order to increase financial security, increase home comfort, and reduce carbon emissions. As the landscape in Oberlin has changed—programs and funding sources coming on- and offline, and changing in nature—POWER has adjusted its strategy. Thanks to the strong Columbia Gas program discussed in the finance section, POWER's main strategy now is to connect residents to that program. The program does this primarily by promoting the Columbia Gas programs; assisting people with Columbia Gas program applications; providing shoulder financing, such as the \$20 for an initial audit; and supporting retrofits through the Energy Advocate program.

According to Amanda Woodrum, researcher with Policy Matters Ohio, she stumbled across the idea of an Energy Advocate while writing a document for the Oberlin Project. She introduced the idea to the Energy Committee of the Oberlin Project, where it was scrutinized and improved upon through a consensus-building process. Cindy Frantz, President of the POWER Board, regards the process of bringing the Energy Advocate from idea to reality as one of the great successes of the Oberlin Project to date.



When the idea was brought to the POWER board, it was met with enthusiasm, as Board Member Doug McMillan recalled in an interview. Kristin Braziunas, now an Assistant Director of the Oberlin Project, and Cindy Frantz, founding member and chair of the POWER board, then wrote grant proposals to the Oberlin Project and Oberlin's Sustainable Reserve Fund to secure funding for the position. In January 2013, Greg Jones was hired by POWER as Oberlin's first Energy Advocate.

### **Effectiveness**

As of October 1, 2013, Greg Jones had walked through sixty homes in Oberlin. At least three households have undergone efficiency improvements. Jones explained that even with Columbia Gas' extensive financing programs, it is often cheaper for homeowners to do the work themselves, so he does not always know when work has or hasn't been done.

While three homes going through with retrofits out of sixty homes walked through seems like a very low conversion rate, at 5% it is higher than the national average. Indeed, in the study done by Hayes et al. (2011) of most efficiency programs in the country, "only two of the programs surveyed had rates that exceeded 3% of the customers targeted by the programs and more than half of the programs had conversion rates below 0.5%" (p. iv). Obviously, this rate is not ideal, and speaks volumes to the complex barriers associated with residential energy efficiency. Unlike Portland's program, which targeted residents most likely to do efficiency retrofits, POWER has sought out those least likely to retrofit their homes. While this lowers the conversion rate of the program, it better serves the community by helping those most in need of efficiency retrofits to save them money.

## **Continued Funding for POWER**

### **POWER as a Non-profit**

The positioning of the energy advocate is extremely important. The necessity for the Energy Advocate to be a trusted actor in the community requires that POWER continue to thrive as an organization. This requires a long term, robust funding strategy. While the most obvious solution is to make it a profitable enterprise that can self-sustain, for-profit status is not compatible with the goals and strategies of the organization. People are mistrustful of those trying to sell something. It is therefore key that the energy advocate is not selling anything, and does not stand to financially gain from “clients” engaging in energy efficiency. The moment that profit comes into the picture, the position goes from advocate to salesperson. This will undermine the effectiveness of the position as well as the entire strategy for energy efficiency.

Although it may seem beneficial and logical for the energy advocate to work for the local government, this too will undermine the efficacy of the position. In a conversation with I had with Greg Jones, Oberlin’s Energy Advocate, he explained that a large fear that residents have throughout the process of engaging in energy efficiency is that the Advocate, energy auditor, or other professional will notice code violations—fire code, occupancy code, etc.—and report them. He currently assures residents that no one is in there to look for violations and will not report them if noticed because it is not their duty. However, if the Advocate worked for the city, it would be much harder to ignore code violations, and even harder to convince residents that violations are being ignored. Thus, the non-profit, non-government affiliated positioning of the Energy Advocate is essential.

## **Capitalizing POWER**

### **Fee for Service**

A potential component of a holistic approach to residential energy efficiency includes some type of energy disclosure policy. In Oberlin's Green Policy Blueprint, a document created by Policy Matters Ohio for the Oberlin Project, the idea of an energy disclosure ordinance is put forth. It reads, "Consumers need better information about the amount and cost of energy used in buildings when they consider buying, renting or leasing them. A growing best practice across the country is to require sellers and landlords to share this information with prospective buyers and tenants" (Woodrum, 2013, p. 11).

According to Councilperson Bryan Burgess, Oberlin used to perform point-of-sale and change-of-occupancy inspections of homes. Discontinued after 2008, these inspections focused primarily on the health and safety aspects of homes and rental properties. If these were to be reinstated, the inspections could be performed by POWER. The inspections would continue to address health and safety, but would also focus more heavily on the efficiency of the home. POWER would perform these inspections as a not-for-profit contractor for the city. This fee-for-service program would provide an income stream to support its other operations. Additionally, it would help to streamline much of the efficiency work that POWER aids with, as change-of-occupancy is the time when it is easiest and most common to do efficiency retrofits.

### **Hybrid Organizations**

In light of the increasing awareness of the need for business to address social needs, and for non-profits to begin to free themselves of the non-profit industrial

complex, a new form of organization has evolved—the hybrid organization. Hybrid organizations have for profit and non-profit arms that ideally are mutually beneficial. POWER could conceivably transition into a hybrid model, with the for-profit arm doing efficiency installations or a related service. However, as discussed previously, the legitimacy of the organization is at stake as soon as it is perceived to be acting out of self-interest. Thus, a hybrid organizational model is not recommended for POWER.

## **Addressing Physical Barriers To Energy Efficiency**

Even though Oberlin and other communities have developed relatively good solutions to the financial and social/psychological barriers to residential energy efficiency, other barriers continue to prevent large numbers of residents from upgrading their homes. This section discusses a lesser-known barrier to energy efficiency: old housing stock.

### **Overview**

Oberlin's housing stock is very old. Nearly 40% of houses were built before 1940 (City-Data, 2012). This reality has two major implications for residential energy efficiency: there is a high rate of return on efficiency work that is done, and there are significant physical and structural barriers to energy efficiency. This section will focus on the latter issue. These physical issues are major barriers in many communities, and Oberlin is no exception. In fact, of the sixteen homes that have had audits performed since January that POWER has worked with, ten of them have had to defer work due to basic home repair issues (Jones, 2013). Across the country in Oregon, the Clean Energy Works Portland case study highlights this issue, saying, "It's critical to find a way to finance pre-weatherization measures (e.g. outdated wiring, siding asbestos, etc.) because

without doing those things, many projects cannot proceed with retrofits” (ACEEE, 2011, p. 5).

This presents a major roadblock in pursuing residential energy efficiency in Oberlin and elsewhere. Home repair is difficult and expensive, and the financing available for energy efficiency does not cover home repair, even if it is a necessary precondition for doing efficiency work.

### **Common Issues**

There are several common home repair issues in Oberlin (and in much of the country) that prevent the implementation of energy efficiency. The most common issue is knob and tube wiring. From the 1890s to the 1930s—the time period when approximately 40% of Oberlin houses were built—the most common electric wiring system was knob and tube. Single insulated copper wire is passed through porcelain tubes, and the whole system is left exposed and attached to the inner walls and ceiling. Because it is exposed, a major fire risk arises from installing any insulation to a wall or attic with knob and tube. In fact, the National Electric Code prohibits installing insulation in any area with knob and tube wiring (Armanda, 2004, p. 1). Unfortunately, replacing the wiring is no small task. According to Bryan Burgess, an Oberlin electrician and member of city council, replacing the wiring in a typical Oberlin home costs approximately \$10,000. This includes all of the equipment, and the labor of three full-time employees for two weeks. In addition to this high cost, the process is extremely disruptive, and it is difficult for residents to live in the house while the work is being done.

Other common issues include venting—often the bathroom vents into the attic instead of outside—mold problems, moisture issues and asbestos in the walls. The venting issue prevents attic insulation, but is easily repaired by rerouting the exhaust. Mold and moisture issues often stem from the ventilation issue, and can be solved in the same ways. Asbestos which is highly carcinogenic when the fibers are exposed, requires removal if exposure is at risk. Depending on the scale of the exposure, this can be a very easy task or a very expensive, laborious one.

## **A Home Repair Cooperative**

While these issues provide significant challenges, they can be overcome. One way to address them is by starting a local, low cost home repair business. This enterprise should be organized as a worker-owned cooperative, ideally encompassing several trades to have the ability to deal with the numerous issues homeowners face.

There are many advantages to this proposition. The first section of the following discussion will deal with the idea of a home repair enterprise; the second section will focus on the cooperative structure. Benefits of a home repair enterprise will come to homeowners, the workers, and the broader community.

### **Benefits to Homeowners**

Homeowners will benefit from having a low cost, one-stop business to call. Right now, when one has an issue in a home that needs repair, it is unclear whom to call. It is hard to find people doing home repair, and once they are found, it's hard to know if they are trustworthy, competent, charging fair prices, etc. Having one enterprise, with the support of community organizations, and potentially Columbia Gas, will ameliorate these issues. Additionally, because of the aid available to a cooperative in Oberlin, the cost to

the homeowner could be significantly lower. The details of these resources are discussed further in the financing a home repair section.

## **Benefits to Workers**

Owner-employees could be recruited from Oberlin, particularly from the unemployed (5.6% according to city-data.com) and underemployed population. Oberlin is fortunate to have the Joint Vocational School (JVS) just outside the city, and workforce development aid could support training programs for the worker-owners. Ideally, several apprentices would work under a foreman in the enterprise. This would put the workers on a path towards a high paying, stable and fulfilling career, with benefits well beyond the paycheck that comes home each week. Matthew B. Crawford—an electrician with a PhD in Political Philosophy from the University of Chicago who runs a motorcycle mechanic shop—in his book *Shop Class as Soulcraft: An Inquiry into the Value of Work*, makes a convincing case of the multitudinous benefits for working in what he referred to as “the useful arts.” Though it would be a disservice to the work to attempt to summarize it here, it is worth extracting a few ideas. Crawford suggested that the trades have psychological, cognitive, and financial benefits to those that take them up.

To make the case for the psychological benefits to workers in the useful arts, Crawford quoted the philosopher Alexandre Kojève:

“The man [sic] who works recognizes his own product in the world that has actually been transformed by his work. He recognizes himself in it, he sees his own human reality in it he discovers and reveals to others the objective reality of his humanity of the

originally abstract and purely subjective idea he has of himself’

(Quoted in Crawford, 2009, p. 15).

Crawford described the experience of finishing a job as “an experience of agency and competence...a social currency” (2009, p. 14).

The book counters the idea that blue-collar jobs are not cognitively challenging and rewarding. The tradesperson must have a deep understanding of her materials, and a knack for complex problem solving. Rather than dealing in the abstract, tradespeople deal with the real, physical world, and understand its ins and outs, as well as its limits. Crawford explains that the Greek word for wisdom, *sophia*, meant “skill” to Homer, and the meaning of the word has since lost its “concrete sense” (Crawford, 2009, p. 22).

“You can’t hammer a nail over the internet” wrote Princeton economist Alan Blinder (Quoted in Crawford, 2009, p. 35). He discussed the difference between personal and impersonal services, the latter being services that can be provided from anywhere—the bulk of services in the information economy. While impersonal services can and are being outsourced rapidly, leaving local communities and the country, those providing personal services such as doctors and plumbers need not worry about their jobs becoming outsourced or obsolete. Promoting personal services provides good, lasting jobs, anchored in the local community. Additionally, workers would benefit from having work right in the community, cutting out commuting costs and time. The benefits to workers from a cooperative structure are discussed below.



## **Benefits to the Community**

The community would benefit greatly from having a cooperative home-repair service in Oberlin. The main benefits are workforce development, increased self-sufficiency, and the benefits of increased safety and efficiency of the homes in Oberlin.

Gar Alperowitz, author of *America Beyond Capitalism*, in a conversation with Michael Shuman, author of *Local Dollars, Local Sense*, said, “A diversified economy that has many kinds of locally owned businesses is a recipe for prosperity” (Alperowitz, personal communication, March 2013). Having less unemployment and higher paying, more fulfilling jobs for more people is vital to a prosperous local community. In the most direct way, when more people are employed at higher levels, income tax revenue is bolstered. Less directly, when there is higher employment, there is more money circulating through the economy. Beyond the narrowly defined economic benefits, communities benefit from higher employment through a more empowered citizenry able to participate more in community life.

In the face of global climate and economic destabilization, self-sufficiency is becoming more and more vital to the prosperity of communities. As the world painfully witnessed in the 2008 financial meltdown, global integration can lead to global collapse when one piece of the puzzle comes loose. Communities with more of their assets invested in the community, and more of their services provided by the community, are more buffered from global instability.

Obviously, having safer homes benefits the community. Asbestos, though generally benign until exposed, is highly carcinogenic, and having it removed increases the health of the whole community. Knob and tube wiring can lead to fires, particularly as plug

loads increase. While the risk is not high enough to justify removing the wiring if other work is not being done, the more that it is replaced, the lower the fire hazard in the community. Additionally, the cooperative could address issues such as helping elderly residents empty their attics or fix loose steps—a good source of revenue for the enterprise, and good for increasing the safety of homes in the community.

## **Organizing The Enterprise as a Cooperative**

There are many types of firms—LLCs, Partnerships, Joint Stock Companies, etc. This section discusses why a firm focused on home maintenance and energy efficiency in Oberlin should be a cooperative.

### **What is a Cooperative?**

Although there is no universally accepted definition of a cooperative, according to the International Cooperative Alliance, a cooperative is “an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise” (Lund, 2011, p. 552). This section will focus on worker owned cooperatives, defined by the United States Federation of Worker Cooperatives (USFWC) as “a business entity that is owned and controlled by the people who work in it” (Artz and Kim, 2011, 7). This means that the employees of the firm are also owners, and have both return rights and control rights to the firm. Return rights entitle a worker/member to a share of the firm’s profit, and control rights entitle a worker/member to a say in the way the cooperative is run. Although there is flexibility in the model, three things define a true worker owned cooperative: worker owners buy into a share of ownership, and all workers collectively

own the firm's assets; workers have control over decisions with a "one person, one vote" system; and workers share the profits of the firm based on their labor input.

Worker cooperatives differ from conventional for-profit firms in several key ways. Cooperatives exist specifically to provide employment to the members; seek to maximize profit per worker instead of net profit; and are entirely run by members, not an external board or CEO. The implications of these differences are discussed below.

### **Why a Cooperative: The Big Picture**

Cooperatives are a key part of the Solidarity Economy, as discussed in the introduction, as they put people, not output, costs, or profits, at the center. Cooperatives help to distribute wealth more evenly, give workers satisfaction and self-actualization in their work, and recognize limits to growth as a fundamental principle.

By putting ownership in the hands of the employees, worker cooperatives distribute capital—the means of production—more evenly, and distribute it to populations that usually don't have access to ownership of capital. This is key not only to the workers' financial wellbeing, but to the prosperity of the entire community.

Worker cooperatives aim to maximize profit for the workers, as opposed to maximizing net profit. This is because a significant component of a worker's compensation comes in the form of profit disbursement, so a cooperative is more successful when each worker is getting more profit, not when the business is making the most possible. Contrast this to a capitalist corporation, which has little incentive to limit the number of employees, because although employees cost the corporation salary and benefits, the same number of people—the shareholders—are splitting the profit. Worker-owners have an incentive to keep the staff of the cooperative relatively small because the

more employees there are, the smaller piece of the pie each worker receives. Therefore, worker cooperatives inherently recognize limits to growth, do not grow beyond their capacity, and tend to stay small.

### **Benefits to the firm**

Despite the very low incidence of worker-owned cooperatives in the United States—only 223 were identified in the country in 2011 (Artz and Kim, 2011, p. 7)—there are several benefits to firms to being a cooperative. There is conclusive evidence showing that at least in some industries, cooperatives are more productive than conventional firms. Indeed, in the plywood industry of the Pacific Northwest, worker owned cooperatives were found to be between six and fourteen percent more productive than conventional firms (Artz and Kim, 2011, p. 17). This can be theoretically explained because workers have an incentive to be more productive, as their compensation rises when productivity increases.

Studies also show that compared to similar conventional firms, cooperatives have lower quit rates (Artz and Kim, 2011, p. 21). This leads to greater job stability and less turnover, which allows workers to develop more firm-specific skills, and therefore be more productive and potentially more innovative.

### **Benefits to the worker**

Cooperatives are good places to work. They promise increased job security, and often pay higher and have greater benefits than traditional firms. Because cooperatives exist for the benefit and employment of the workers, they tend to adjust wages before employment—worker-owners often vote to take a pay cut as opposed to laying off a coworker—and therefore have lower layoff rates. Although it is sometimes perceived

that workers give up wages for less consistent profit disbursements, the evidence shows that the dividends are typically paid in addition to a living salary, not replacing that salary (Artz and Kim, 2011, p. 20).

Working in a cooperative can be more fulfilling for workers due to both return rights and control rights. Because worker/owners are apportioned a percentage of the firm's profits, and that percentage is proportional to labor inputs, as a worker produces more—or better or faster, she reaps the benefits directly. This means that workers have more of a stake, literally, in their work, which can make it more fulfilling. Because workers have control rights, they can actively work to make the firm better. When a particular policy, or physical space, or decision about pay is not acceptable to a worker, she has many options for changing the situation.

### **Benefits To The Community**

Worker cooperatives are beneficial to local communities because they are anchored, and therefore keep wealth local; often form and prosper countercyclically; and often have explicit local development goals.

Because workers are the owners, cooperatives will not exit a locality when conditions become less favorable. This alone, and the simple fact that the workers are members of the local community, links cooperatives closely to the communities in which they reside. Instead of the profits going to outside and absentee investors, as much of the profit from for-profit firms does, it stays in the community. Evidence shows that cooperatives form countercyclically—when the economy is in recession, cooperatives expand in number and membership, not contract (Artz and Kim, 2011, p. 21). This helps to maintain employment and prosperity in communities.

Since cooperatives tend to serve a local community, they also have responsibilities to the communities, explicitly or not. One author found that cooperatives “readily hired workers who had suffered long periods of unemployment” (Artz and Kim, 2011, p. 23), suggesting that this “may reflect the nature of the cooperatives’ link with the local community, and indicate a willingness to exert positive discrimination in favor of workers disadvantaged in the local labor market” (Bartlett et al., 1992, p. 115). Some cooperatives, such as the Evergreen Cooperatives in Cleveland, have an explicit community development focus. This is expressed through a commitment to hire local, hard to employ people, and life skills training and support built into the employment setting.

## **Organization**

In order to best address the needs of the community, as well as to raise sufficient revenue, the home repair cooperative will have a broad scope, from doing yard work and cleaning out garages, all the way up to electrician work such as replacing knob and tube wiring. While ideally all employee-owners would be fully employed at high wages, the nature of the work requires the flexibility of a differentiated work force. Thus, there will be a management position, several full time employees, and several part-time employees.

Casey Gilfether, former manager at Ohio Cooperative Solar (an Evergreen Cooperative) discussed the difference between worker-ownership and worker-management. Owners focus on the long-term viability of the company, and consider the big, strategic decisions. Managers, on the other hand, are tasked with the daily decision-making and oversight. He stressed the importance of strong management by those trained as managers. This was a particularly salient lesson for him, since Ohio

Cooperative Solar hired mostly formerly incarcerated people with little experience working in the legal economy. The worker-owners he worked with were not used to working in a professional environment, and, while fully capable of doing the work and considering the long-term vision, their lack of experience made it difficult for them to think like effective managers.

While there are examples of coops where the manager is not a worker-owner, Gilfether suggested that the manager should be a worker-owner like the other employees. This question is important because a manager typically is at a higher pay grade than the other employees, which can cause strife if not properly organized. Having the manager also be a worker-owner signals buy-in and communality, lessening class divisions.

In addition to traditional marketing, POWER, other community organizations such as Oberlin Community Services and the Zion Community Development Corporation, and Columbia Gas can help by referring residents to the home repair cooperative.

## **How To Finance a Home Repair Cooperative**

Like any business, a home repair cooperative will require significant initial investment as well as long term financing. Initial costs include physical capital like a pick-up truck, tools, and an office space; legal and administrative fees; advertising; and specific education for employees. In trying economic times, raising initial capital for a small business can be prohibitively difficult. Fortunately, due to the specific positioning of a worker cooperative in Oberlin, there are ample resources available for raising initial capital and continued support. For this cooperative, or any corporation, to be sustainable, it must make a profit. A business model must not rely on donations for its continued existence. However, public and private support are extremely valuable for start-up.

This section reviews and evaluates potentially available public, private, and community resources.

## **Public Resources**

Oberlin has access to a host of public resources. By virtue of having a population under 50,000, Oberlin is a designated Rural Area (USDA, 2011, 1). This designation allows access to the United States Department of Agriculture (USDA) Rural Development programs. Nationally, “USDA Rural Development has a \$181.1 billion portfolio of loans and will administer \$38 billion in loans, loan guarantees and grants through our programs in the current fiscal year” (USDA, 2013). The program exists to economically support rural communities. In part due to the deep connections between rural areas and cooperatives, Rural Development has a number of programs supporting rural cooperatives. These include Business and Industry Guaranteed Loans, Rural Cooperative Development Grants, and Rural Economic Development Loan and Grant (REDLG). The home repair cooperative could apply for any or all of these grants and loans, aiding in development and continuing support.

### *The Business and Industry Guaranteed Loans (B&I)*

The Business and Industry Guaranteed Loans (B&I) program’s aim is to “improve, develop, or finance business, industry, and employment and improve the economic and environmental climate in rural communities” (USDA, 2013). To borrow under the program, an enterprise must improve the economic or environmental climate of a rural community. The program provides up to 80% guaranteed loans for \$5 million dollars or less. This means that the government will take responsibility for 80% of the principle of a loan in the case of the borrower defaulting. The home repair cooperative could take



advantage of this loan program for start-up capital; a major advantage when a business has few assets to use as collateral. The Intermediary Relending Program exists to provide financing for a revolving loan fund. While this document recommends against setting up a revolving loan fund for efficiency work (see the finance section), if there was significant leverage of public resources to start one, it could be worth looking into.

#### *The Rural Cooperative Development Grants (RCDG)*

The Rural Cooperative Development Grants (RCDG) program was started to assist in the startup, expansion, or improvement of rural cooperatives. Non-profit organizations and institutions of higher education alone are eligible for this program. This would allow POWER, Zion Community Development Corporation and Oberlin College to get involved with the start-up of the cooperative enterprise. This arrangement of non-profits aiding in the development of a profitable enterprise is intuitive, since the non-profits have a focus on community development.

#### *The Rural Economic Development Loan and Grant (REDLG)*

The Rural Economic Development Loan and Grant (REDLG) program provides funding through utilities. The program lends at zero interest to utilities that can use that to finance local enterprises. This could be used to finance the start-up or continuing needs of the cooperative. In this case, Oberlin Municipal Light and Power (OMLPS), Oberlin's municipal utility, would apply for the grant or loan, and use the financing to support the cooperative. OMLPS would not need to be the organization to initiate the cooperative to take advantage of this program. An arrangement such as this would tie the work of the cooperative into the utility, making a stronger network of community support.

### *Housing Repair Loans*

Two Rural Development programs exist to finance home repair, the Rural Housing Direct Loan program and the Rural Repair and Rehabilitation Loan and Grant program. While these would not directly finance the enterprise, they could majorly subsidize the cost to income qualified consumers. The cooperative could help residents connect with these financing resources. The housing repair loans and grants are key to decreasing physical and structural barriers to residents, as they decrease the total cost of energy efficiency retrofits significantly. By working with a local bank, the cooperative could work to leverage the public dollars with additional private financing. This is more valuable than seeking additional funding for efficiency, as discussed in the Financing Energy Efficiency section, because similar products exist for financing energy efficiency, but not home repair. Foundations currently financing energy efficiency could also be attracted to aid in this, as their contributions could match the public dollars in the form of grants.

### *Conclusion*

While there are significant resources available through Rural Development, it should not be the only source of funding considered. Federal dollars are increasingly unreliable, as austerity measures are taken and the government threatens to shutter on a quarterly basis. Additionally, there are few opportunities for local lenders to capitalize upon the federal loans.

## Private Resources

Public funding should not be the only source of initial funding and continuing support for the home repair cooperative. A number of sources of private financing and funding exist, and should be taken advantage of.

### *Community Development Financial Institutions*

There are a number of Community Development Financial Institutions dedicated to the cooperative vision. A Community Development Financial Institute (CDFI) can be any form of financial enterprise—a bank, venture capital firm, etc.—with a specific duty to serve underserved communities. Most CDFIs are non-profit, and can therefore make grants as well as loans. Three notable CDFIs with cooperative foci are Common Wealth, Inc., the LEAF Fund, and the Northcountry Cooperative Development Fund. Common Wealth is based in Ohio, and is a revolving loan fund for cooperatives. LEAF and Northcountry are both Community Development Loan Funds. Investors can invest in them at low but stable interest rates. Notably, the Oberlin Student Cooperative Association (OSCA) invests in the Northcountry Development Fund.

Private investors, including Oberlin College, could invest in the cooperative being developed here in Oberlin, with the benefit of insured and professionally administered lending, as well as modest but reliable returns on investment. This is an enormous opportunity to connect Oberlin's resources with the needs of the community.

The prospect of Oberlin College investing in Oberlin recently became significantly more feasible. In October of 2013, the College's Board of Trustees announced the Impact Investing Platform. While the details are still unclear, I have been told that five million dollars should be moved from the endowment's current investment portfolio into

impact investing over five years. Impact investing—investing for the impact, not just the returns—can be understood in many ways. However, the most direct impact the college can have is in its own community, so connecting this Platform with the cooperative is both feasible and desirable for many stakeholders.

### *Multi-stakeholder Cooperative*

Because the home repair cooperative will exist to serve many constituencies—the worker-owners benefitting from employment, the homeowners benefitting from low cost services, and the community benefitting from more local dollars circulating, a healthier environment, and larger tax base—it makes sense to formalize those relationships, and recognize several parties as having a stake in the enterprise. Multi-stakeholder cooperatives do just this—give a formal role and stake to several different classes of beneficiaries. This could be producers and consumers, workers and clients, or any combination, including community members and investor members.

Multi-stakeholder cooperatives have two main benefits over traditional single-party cooperatives. First, they focus on commonalities instead of differences between stakeholders. While traditionally seen as in opposition, producers and consumers can join together to work towards common interests—such as supplying a community with a needed product or service and creating good, local jobs that are anchored in the community.

The second major benefit, more valuable to the question at hand, is that start-up funds and continued investment are much easier to secure in a multi-stakeholder cooperative. Since traditionally all profits from a cooperative go to the members or back into the firm, attracting investment capital is nearly impossible. A multi-stakeholder

cooperative allows for investor-members or community-members, who can invest financial and social resources in the cooperative, in return for financial return and/or control rights. These rights do not need to be distributed evenly among members. More control rights can be given to the worker-owners, since they are involved in the day-to-day operations of the business. Return rights can be prioritized to investor-members since they enable the existence of the co-op, or to the workers since they depend on the profit disbursements to make ends meet.

Regardless of the particular arrangement, a multi-stakeholder cooperative is a good option for the home repair cooperative in Oberlin. The authors of “Solidarity as a Business Model: A Multi-Stakeholder Cooperatives Manual” write, “When the perception of the absence of certain desirable qualities is coupled with the confidence that it is possible for constituents to build a better way themselves, a fruitful ground for multi-stakeholder cooperatives is born” (Artz and Kim, 2011, p. 5). Since this cooperative will address the multiple needs of affordable home repairs, increased employment, more democratized wealth, and environmental sustainability, a multi-stakeholder cooperative with a mix of worker-members, community-members, and investor members is the preferred organizational model.

## **Case Studies**

Eroski is the distribution division of the Mondragon Cooperative Corporation, the most successful and prolific cooperative network in the world. Eroski, the second largest grocery company in Spain, is a worker-consumer cooperative. It was founded in 1969, currently operates 2,110 stores, and had net sales of 6,222 M € in 2012 (Eroski, 2013).

Workers and consumers have equal representation on the board. To become a member, a

consumer pays \$75 a year, which entitles her to a 5% discount on all purchases.

Employee owners buy a stake in the cooperative for \$6,500, financed through payroll deductions, which entitles them to profit disbursements (Lund, 2011, p. 35).

The Penticton and Area Cooperative Enterprise (PACE) provides “transition to employment, skill training and paid work to those who are mentally ill.” PACE operates 11 businesses, and the workers in the businesses are also the consumers of the cooperative’s services, such as job training and social services. Thus, it is a consumer and supporter owned cooperative. Those benefiting from the services, the consumers, have 70% board representation. The supporter class, which includes community members and former consumers of the services, have 30% representation. The organization is incorporated as a for-profit cooperative.

Obviously, there are many options for organizing a multi-stakeholder cooperative. Each formulation has its own challenges and opportunities. While the community and the founding employees of a home repair cooperative should decide for themselves how to organize a cooperative enterprise, a multi-stakeholder model is flexible and affords many advantages.

## **Challenges to a home repair cooperative**

Although Oberlin has many assets that would make a home repair enterprise possible and successful, the idea is not without challenges. As the enterprise will have access to increased private and public financing, it should significantly reduce the cost of home repair for energy efficiency work. However, it is unlikely that it will take the cost to zero. Because there will still be inconvenience and financial sacrifice, this proposal will not completely eliminate the physical and structural barriers to energy efficiency.

Much home repair work is seasonal—exterior work can't be done in the winter; attic work can't be done in the summer, etc. In order to provide a living wage for the worker-owners, it would be imperative that they can be fully employed throughout the year. The same concern goes for part-time employees—what do they do when they're not working? While it is certainly possible to carry several part-time jobs, it is often hard to support ones self while doing so, and still have the time and energy to be an active family member and community member. Therefore, ensuring living wage employment to its employee-members would be a major challenge for the proposed enterprise.

Bryan Burgess explained that a contractor's business relies on her reputation. This complicates the vision of a cooperative with several different tradespeople working under one name. If even one employee does poor work even once, it could have a serious negative impact on the whole business and each employee individually. Also, Oberlin's small size helps spread the word if the business does good work, but spreads bad reports as well. While this can be seen as a major challenge, it can also be seen as a huge opportunity for ensuring high quality work and cooperation between employees. Since all of the employees depend so intimately on the performance of their coworkers, they will help out to ensure good work is performed.

## **Areas for Further Research**

### **Split Incentives**

Nearly half of residents in Oberlin rent their homes (City-Data.com, 2013). It is very difficult to do energy efficiency retrofits in renter-occupied houses, because of the split incentive problem. This describes the conundrum experienced in renter-occupied homes: renters pay utility bills, so landlords do not have an incentive to

make their homes more efficient; but renters occupy the home for too short a time to reap the benefits of retrofits, and often are not allowed to change the homes anyway. Thus, neither party typically will invest in energy efficiency, so it never happens.

Unfortunately, the split incentive issue is out of the scope of this project. I address the issue briefly in the section discussing opportunities for continuing support for POWER. In that section, I discuss change-of-occupant inspections, which could be a piece of a broader energy use disclosure program in Oberlin. In such a program, those selling or renting a home would have to publicly provide data on the efficiency of the house or apartment. However, since energy use is behavior dependent, this reporting would be only partially informative. The issue of a more effective energy disclosure policy, as well as broader solutions to the split-incentive barrier, is a place for further research.

## **Business Plan**

In the previous section, I make the case for developing a home repair cooperative. While this section includes significant detail, it is by no means exhaustive. Before a cooperative is to be developed, significantly more research is required. A business plan should be developed with detailed analyses of viability. Particular questions of interest include: the appropriate scale for the cooperative, and the extent to which the cooperative can reduce costs for homeowners.

## **Conclusion**

In this thesis, I have presented three barriers to residential energy efficiency: financial, social and psychological, and physical.



Although financial barriers are often the first to be considered, finance is not the primary barrier to energy efficiency, at this time and place. I advise against investing additional resources in the development of new finance mechanisms in Oberlin because Oberlin already has adequate finance programs, finance does not drive demand, and there are significant economic barriers that prevent the viability of a finance mechanism.

Social and psychological barriers are extremely important to overcome to enable residential energy efficiency. These barriers stem from negative attitudes towards retrofitting homes, cognitive barriers of ignorance and overload, a lack of personal feelings of efficacy, and a lack of social norms supporting energy efficiency retrofitting. The city of Oberlin, along with several other communities, has effectively addressed these social and psychological barriers with the Energy Advocate program. The positioning of the Energy Advocate in a non-profit organization is vital to its success.

The last section of this paper is the greatest contribution to the conversation around residential energy efficiency. The old age of the housing stock in Oberlin and other communities has created a major barrier to energy efficiency, because home repair is often required before efficiency retrofits can be installed. However, there is no funding or financing available to aid homeowners in this necessary pre-retrofitting work presently.

I suggest the creation of a worker owned home repair cooperative to address this issue. A cooperative home repair business could attract unique funding, which would bring the cost of home repair to acceptable levels to most members of the

community. Additionally, by bringing good, stable jobs to the community, and by distributing wealth more equitably through worker-membership, a home repair cooperative will help to make Oberlin more resilient and prosperous while decreasing our carbon footprint.

Though clearly not a fleshed out business plan, this document is intended to be prescriptive. The urgency of the issues contemporary humans must address—climate change, poverty, injustice—require more than good ideas and deep conversations. This project adds to the academic literature, but also adds to a conversation about how a small, committed community can and should respond to the challenges it faces. This document is not meant to collect dust in a library; it is meant to collect coffee stains and red ink long after the grade has been submitted.

# **Appendix**

## **Resources**

This section is a collection of resources for anyone interested in pursuing the concept of a home-repair cooperative. Some resources are focused on Oberlin, while others will be useful in many communities across the country.

### **USDA Rural Development Local Office**

Massillon Area Office  
2650 Richville Dr. SE, Suite 102  
Massillon, OH 44646  
(330) 830-7700

This is the contact office for Lorain County for the USDA Rural Development office.

Questions regarding the financing programs available through USDA RD should be directed to this office.

### **Democracy at Work Institute**

<http://institute.usworker.coop/resources>

This links to the Democracy at Work Institute's Resource Library. Resources cover all issues of worker-owned cooperatives, from raising initial capital to creating a culture of cooperation.

### **Lorain County Joint Vocational School (JVS)**

<http://www.lcjvs.com/adult/>

The Joint Vocational School is located just south of the City of Oberlin. JVS offers high quality vocational training at reasonable costs, and would be a key partner in getting an enterprise off the ground in Oberlin.

## **Case Studies**

Clean Energy Works Portland

[http://aceee.org/files/pdf/case-studies/Portland\\_Clean\\_Energy\\_Works.pdf](http://aceee.org/files/pdf/case-studies/Portland_Clean_Energy_Works.pdf)

Murray City Ohio

<http://www.forbes.com/sites/justingerdes/2013/01/29/small-town-big-energy-savings-retrofitting-block-by-block-in-murray-city-ohio/>

## References

- ACEEE. (2011). *Case Study—Clean energy works portland.*, 2013, from [http://aceee.org/files/pdf/case-studies/Portland\\_Clean\\_Energy\\_Works.pdf](http://aceee.org/files/pdf/case-studies/Portland_Clean_Energy_Works.pdf)
- AJZEN, I. (1985). From intentions to actions : A theory of planned behavior. *Action Control: From Cognition to Behavior*, , 11-39.
- Alperovitz, G., & Shuman, M. (2013). *Conversation*
- Armanda, L. D. (2004). *Retrofitting knob and tube wiring an investigation into codes, assessment, wiring practices and cost* Pennsylvania Department of Community and Economic Development.
- Artz, G. M., & Kim, Y. (2011). *Business Ownership by Workers: Are Worker Cooperatives a Viable Option?*,
- Bartlett, W., Cable, J., Estrin, S., & Jones, D. C. (1992). Labor-managed cooperatives and private firms in north central italy: An empirical comparison. *Indus.& Lab.Rel.Rev.*, 46, 103.
- Borgeson, M., Zimring, M., & Goldman, C. (2012). The limits of financing for energy efficiency. *Berkeley Lawrence National Laboratory*, Available at <Http://eetd.Lbl.gov/ea/emp/reports/limits-Financing-Ee-2012.Pdf>,
- City Data. (2012). *Oberlin, OH houses and residents.*, 2013, from <http://www.city-data.com/housing/houses-Oberlin-Ohio.html#boxMAPborder>
- City of Madison, W. (2013). *Energy advocates.*, 2013, from <http://www.cityofmadison.com/greenMadison/residents/program.cfm>
- Crawford, M. B. (2009). *Shop class as soulcraft* (Unabridg ed.). United States: Brilliance Audio, Inc.
- Crawford, M. B. (2009). *Shop class as soulcraft :An inquiry into the value of work*. New York: Penguin Press.
- Cunningham, K., & Hannigan, E. (2013). *Comparison of Home Retrofit Programs in Wisconsin*,
- Douthwaite, R. (1996). Short circuit: Strengthening local economies for security in an unstable world. *Resurgence Book*,
- Douthwaite, R. J. (1996). *Short circuit :Strengthening local economies for security in an unstable world*. Dublin, Ireland: Lilliput Press.

- Eroski. (2013). *Eroski contigo: Relevant data from 2012.*, 2013, from <http://www.eroski.es/conoce-eroski/memoria-2012/principales-datos-relevantes-de-2012>
- Folbre, N. (2009). *Greed, lust & gender :A history of economic ideas*. Oxford; New York: Oxford University Press.
- Friedman, M. (1962). *Capitalism and freedom*. Chicago: University of Chicago Press.
- Gerdes, J. (2013, 1/30/2013). 7 lessons learned from award-winning block-by-block retrofit project in murray city, ohio. Message posted to <http://www.forbes.com/sites/justingerdes/2013/01/30/7-lessons-learned-from-award-winnning-block-by-block-retrofit-project-in-murray-city-ohio/>
- Gordon, J. R. (2000). *Retrofitting insulation in cavities with knob-and-tube wiring: An investigation into codes* Building Research Council. University of Illinois.
- Hayes, S., Nadel, S., Granda, C., & Hottel, K. (2011). What have we learned from energy efficiency financing programs?
- Hirschman, A. O. (1992; 1986). *Rival views of market society and other recent essays* (1 Harva University Press pbk ed.). Cambridge, Mass.: Harvard University Press.
- Jones, G. (2013). *POWER client spreadsheet*. Unpublished manuscript.
- Kuttner, R. (1999; 1997). *Everything for sale :The virtues and limits of markets*. Chicago, Ill.: University of Chicago Press.
- Lewis, M., Swinney, D., Allard, J., Davidson, C., & Matthaei, J. (2008). Social economy & solidarity economy: Transformative concepts for unprecedented times? *Solidarity Economy: Building Alternatives for People and Planet*, , 9-22.
- Lormet. (2013). *Lormet credit union: Rates.*, 2013, from <http://www.lormet.com/asp/rates.asp>
- Lund, M. (2011). Solidarity as a business model: A multi-stakeholder cooperatives manual. *Cooperative Development Center, Kent State Univ*,
- Marx, K. (1964). *Economic and philosophic manuscripts of 1844* [Selections.English] (1 American ed.). New York: International Publishers.
- Marx, K., & Engels, F. (1986). *Wage-labor & capital :Revised translation* [Lohnarbeit und Kapital.English]. Chicago: Charles H. Kerr.
- McKenzie-Mohr, D. (2011). *Fostering sustainable behavior :An introduction to community-based social marketing* (3rd ed.). Gabriola Island, BC: New Society Publishers.

- Polanyi, K., & MacIver, R. M. (1957). *The great transformation* Beacon Press Boston.
- Sandel, M. J. (2012). *What money can't buy :The moral limits of markets* (1st ed.). New York: Farrar, Straus and Giroux.
- Schumacher, E. F. (1973). *Small is beautiful; economics as if people mattered*. New York: Harper & Row.
- Shuman, M. (1998). *Going local :Creating self-reliant communities in a global age*. New York: Free Press.
- Shuman, M. (2012). *Local dollars, local sense :How to shift your money from wall street to main street and achieve real prosperity*. White River Junction, Vt.: Chelsea Green Pub.
- Steinmo, S. (2010). *The evolution of modern states :Sweden, japan, and the united states*. Cambridge; New York: Cambridge University Press.
- Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407-424.
- U.S. Department of Housing and Urban Development. (2013). *HUD implementation of the recovery act.*, 2013, from <http://portal.hud.gov/hudportal/HUD?src=/recovery/about>
- USDA. (2011). *Report on the definition of "rural"*. <http://www.rurdev.usda.gov/Reports/RDRuralDefinitionReportFeb2013.pdf>: U.S. Department of Agriculture Rural Development.
- USDA. (2013). *Business and cooperative assistance.*, 2013, from [http://www.rurdev.usda.gov/BCP\\_gar.html](http://www.rurdev.usda.gov/BCP_gar.html)
- USDA. (2013). *United states department of agriculture rural development: About rural development.*, 2013, from <http://www.rurdev.usda.gov/AboutRD.html>
- Von Hayek, F. A. (1944). *The road to serfdom*. Chicago: University of Chicago press.
- Wesley Schultz, P. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology*, 21(4), 327-339.
- Woodrum, A. (2013). *The Oberlin Project Green Policy Blueprint*. Policy Matters Ohio.